A word square of order $k$ is a matrix of $k \times k$ letters in form that in each row and in each column a word of the dictionary appears and that the same words are read horizontally and vertically. For instance, below some word squares of order three to eight are given:

```
BIT CARD HEART GARTER BRAVADO LATERALS
ICE AREA EMBER AVERSE RENAMED AXONEMAL
TEN REAR ABUSE RECITE ANALOGY TOEPLATE
DART RESIN TRIBAL VALUERS ENPLANED
TREND ESTATE AMOEBA RESINATED
REELED DEGRADE AMANDINE
ODYSSEY LATEENER
SLEDDESS
```

Write a program that reads a dictionary and prints if various matrices of characters are or are not word squares.

**Input**

Input has two parts:

- The first part is a dictionary of $n$ words. First, the value of $n$ is given. Then, $n$ words of the dictionary (all in uppercase letters) come in lexicographical order.

- The second part is various matrices of characters. Each matrix starts with an integer $k$ that indicates the number of rows and columns and continues with $k^2$ characters (all uppercase letters) arranged in $k$ rows and $k$ columns. The value $k = 0$ indicates the end on the input.

**Output**

For each matrix of the input, print “YES” if forms a word square using some of the dictionary words and must print “NO” otherwise.

**Observation**

In private test data is used a dictionary derived from `/usr/share/dict/words` with four hundred thousand words and a thousand of matrices are tested.
Sample input

10
AREA BETTER BIT CARD DART HELLO ICE REAR TEN THE

3
BIT
ICE
TEN

4
CARD
AREA
REAR
DART

3
THE
HIS
ESA

3
THE
THE
THE

0

Sample output

YES
YES
NO
NO

Problem information

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